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# MEDICAL NEWS LETTER

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### Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor are they susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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### Dependents and Their Eligibility for Medical Care

Since Pearl Harbor Day of 1956, the Navy Medical Department has been working with new and important legislation - The Dependents' Medical Care Act. This Act has been given wide publicity by various information media. Nevertheless, many service personnel and their dependents seek further information at naval medical activities regarding the type of care which they may receive and the method of obtaining such care. To reply to the many inquiries, all Medical Department personnel are encouraged to become familiar with categories of dependents eligible to receive care, and whether or not they are entitled to medical care at service facilities or from civilian sources.

Dependents of the following service personnel are eligible for authorized care at service medical facilities:

1. Personnel serving on active duty in the Army, the Navy, the Air Force, the Marine Corps, the Coast Guard, the Commissioned Corps of the Coast and Geodetic Survey and the Commissioned Corps of the Public Health Service.
2. Retired personnel who are entitled to retired, retirement, retainer or equivalent pay as a result of service in a uniformed service. However, retired personnel and their dependents, entitled to retired or retirement pay under Title III of the Army and Air Force Vitalization and Retirement Equalization Act and who served less than eight years on full time duty in active military service, other than active duty for training, are NOT eligible to receive medical care at Government expense.

For practical purposes, dependents of active duty and retired personnel may be classified in six categories:



1. Lawful wife
2. Lawful husband, if in fact dependent on the member for over one-half of his support
3. Unmarried legitimate children, including adopted or step children who are:
  - a. Under 21 years of age.
  - b. Over 21 years of age, but dependent for over one-half of their support because of physical or mental incapacity that existed before reaching 21.
  - c. Under 23 years of age, but dependent for over one-half of their support because of enrollment in a full-time course of instruction in an institution of higher learning approved by Secretary of Defense.
4. Parents or parents-in-law, if in fact dependent on the said member or retired member for over one-half of their support and provided they are actually residing in the household of the said member or retired member.
5. Unremarried widows and dependent children of deceased personnel whose death occurred while on active duty or in a retired status.
6. Unremarried widowers, if they were in fact dependent on the member at time of her death for over one-half their support because of mental or physical incapacity.

The Act grants the dependents of active duty and retired personnel in the above categories legal entitlement to authorized inpatient and outpatient care and treatment on an equal basis in medical facilities of all uniformed services. This includes hospitals and dispensaries of the Army, Navy, Air Force, and U.S. Public Health Service designated to provide such care.

Civilian medical care at Government expense is limited to specific dependents of personnel serving on active duty in the uniformed services. Only the wives (or dependent husbands) and the dependent children of active duty personnel are eligible to obtain authorized medical care in civilian hospitals and from civilian physicians and surgeons at Government expense.

However, wives and children of active duty personnel are not authorized to obtain the services of civilian physicians or surgeons for treatment normally performed in homes, offices, or the outpatient department of a hospital or clinic at Government expense. In short, medical care normally considered to be outpatient care is NOT authorized from civilian sources. However, certain exceptions are made in the case of prenatal and postpartum maternity care, bodily injuries, and diagnostic tests before and after hospitalization for injury or surgery.

Civilian medical care at Government expense is NOT authorized for:

1. Parents or parents-in-law of active duty personnel, even though they are dependent on and live with the active duty members upon whom dependent.

2. Dependents of retired or deceased personnel.

(Medicare Div, BuMed)

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### Malignant Melanoma of the Choroid

Some cases of malignant melanoma of the choroid pose little or no problem in diagnosis. However, in other cases, after all available diagnostic procedures have been used, only a presumptive clinical diagnosis can be made. The decision for enucleation then must rest on clinical judgment and consideration of the risk involved in watchful waiting—especially in an eye with useful vision.

To discover clinical criteria which might be of help in making a differential diagnosis, a survey was made of the melanomas received at the pathology laboratories at the Illinois Eye and Ear Infirmary and the Research and Educational Hospitals of the University of Illinois. The clinical descriptions were studied and an attempt was made to correlate them with the histologic picture. Those cases in which the eye was enucleated because of the possibility of a melanoma and in which, on histologic examination, no tumor was found, are presented to show some of the commoner conditions to be considered in differential diagnosis.

In this series, there are 228 cases of malignant melanoma of the choroid. Melanomas of the anterior segment and other types of tumors were excluded. In 24 of these eyes, the tumor was discovered in the laboratory and was not suspected clinically. Eighty-one eyes were enucleated because of the possibility of melanoma and were found not to contain tumors.

In a table are listed some of the clinical characteristics of these tumors with or without associated "serous" retinal detachments which were encountered in this series. The tumor had broken through the retina to grow freely in the vitreous in 3% of the cases. Forty-six percent of the cases were described as solid tumors. However, histologically, small serous detachments were found along the edge of many of the larger solid tumors. Thirty-nine of the cases were described clinically as solid plus serous detachments. In 11% of the cases, only a large serous retinal detachment was visible. A retinal tear was described in only one eye containing a melanoma.

The shape and elevation of the tumors varies greatly. An illustration shows a very flat tumor which had already spread extrabulbarly to involve an extraocular muscle. The first clinical manifestation of such tumors may be a paresis of an extraocular muscle or an exophthalmos. The differential diagnosis of these flat melanomas may be difficult. Metastatic carcinoma



tends to remain flat as it spreads throughout the choroid. Choroiditis or subretinal hemorrhage may give a similar picture.

Pigmentation in melanomas varies greatly. The tumor may be heavily pigmented and appear black or brown. In other melanomas, the pigment runs in streaks or clumps and gives a mottled appearance to the tumor.

The presence of a serous detachment adds to the difficulty in diagnosis of a malignant melanoma of the choroid. The serous detachment may completely surround the tumor, but it is usually more pronounced on the dependent side of the tumor. The tumor is usually in contact with the retina at the highest point of elevation and retinal striae may radiate from this apex.

Cystoid degeneration of the retina overlying a tumor will sometimes create confusion in diagnosis. It is not uncommon to have cystoid spaces occurring in old simple detachments. Old blood or hemosiderin in these cystoid spaces may give a bulky shape to the retina and even interfere with transillumination.

Of the 62 glaucomatous eyes containing melanomas, 92% were found to have the angle of the anterior chamber blocked by peripheral anterior synechiae. The tumor invaded the angle sufficiently to cause glaucoma in 5% of the cases.

Inflammation is common in eyes harboring melanomas. Fifty-two percent of 99 eyes were described clinically as showing active uveitis or posterior synechiae. Histologically, posterior synechiae were found in 75% of 197 cases.

Benign melanomata in the iris of the involved eye were reported clinically in 8% of the cases, a figure closely corresponding to the findings of Reese who considers this an important clinical adjunct. Histologic examination of 199 eyes revealed benign nevi in the iris of 42% of the cases. Many of these nevi were small and could be easily overlooked clinically. Wilder reported benign melanomas present in the iris of 67% of the eyes containing malignant melanomas of the choroid and in 50% of other eyes. She further reported that the benign nevi seen in eyes with malignant melanoma tend to be larger than those seen in eyes not containing tumors.

Routine histologic examination of eyes revealed 24 melanomas which were not suspected clinically. The clinical diagnosis in these cases was glaucoma with cloudy media in 18 cases, phthisis bulbi in 3 cases, and retinal detachment in 3 cases.

There were 81 cases of clinically suspected melanomas in which a tumor was not found on histologic examination. This figure is alarming until it is realized that most of these eyes did not have useful vision. The conditions found in the 81 eyes are listed in a table.

A series of 228 cases of malignant melanoma of the choroid are described with correlation of the clinical and histologic findings. Twenty-four of these melanomas were not diagnosed clinically. In addition, 81 eyes, which were enucleated because of a clinical suspicion of malignant melanoma,

are presented to illustrate some examples of conditions to be considered in differential diagnosis. (Kirk, H. Q., Petty, R. W., Malignant Melanoma of the Choroid: Arch. Ophth., 56: 843-860, December 1956)

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### Gastric Cytology Studies

In the last 10 years, much interest has been shown in gastric cytology as a useful clinical aid. This procedure is not new. A number of German investigators at the turn of this century reported good results utilizing a technique devised by Ehrlich. Direct examination of unstained and unfixed gastric aspiration material was made. One investigator obtained an accuracy of 86% in 37 patients with gastric cancers.

In 1948, Ulfelder, Graham, and Meigs, using normal saline lavage and rapidly processing the material obtained, described good results. This group reported an accuracy of 85% in 14 cases of gastric carcinoma. After introduction of the saline solution through a stomach tube they suggested rotating the patient from side to side in the supine position so that all surfaces of the stomach were adequately lavaged.

Abrasive cytology was introduced in 1950 by Panico, et al., who proposed the use of a double-lumen tube on the end of which was an inflatable balloon covered by a fine mesh. The inflated balloon was used to abrade the mucosa of the stomach and, thereby, to promote exfoliation of cells. First attempts with this technique resulted in an accuracy of 82.4%. Rubin et al., designed a similar balloon which was considered more certain of reaching antral and prepyloric lesions. It had a weighted mercury tip distal to the balloon that could be visualized fluoroscopically to pass into the proximal duodenum; one could be assured under these conditions of the balloon's antral position. In 1953, Ayre introduced another abrasive instrument known as the Ayre brush. This instrument consisted of a plastic tube enclosing a cable on the end of which was a small soft bivalved brush made of boar's hair. The brush was maneuvered to the site of the lesion and by rotation of the cable, the involved portion of the stomach was selectively swept. Smears were then made from material collected by this procedure. Ayre reported an accuracy of 78% in 14 cases of gastric cancer in which the brush was used.

More recently, investigators have been carrying out combined cytologic studies, gastric abrasion, and gastric lavage. In an analysis of 122 patients investigated, final diagnosis was ascertained by observation of response to medical therapy or by surgical exploration. The specimens obtained from 5 additional patients were unsatisfactory principally because insufficient material was delivered for microscopical analysis. These data were not included in the statistics.



A combined procedure of gastric abrasion and gastric lavage was performed in all of the 122 patients. Abrasion was obtained with the Ayre brush under fluoroscopic control. Buffer acetate, to which a mucolytic agent (chymotrypsin) was added, served as the vehicle for gastric lavage in the first 100 patients. In the last 22 patients, physiologic saline solution alone was used. In a number of patients, the lavage immediately preceded the abrasion; in others, the reverse procedure was employed. The authors found no significant difference in the microscopical results by altering the order of procedure.

Various types of gastric types were used. For ease of passage as well as efficient aspiration, the authors found the Ewald evacuator superior. This tube has a large rubber bulb that permits vigorous gastric lavage, and it is believed that the effort exerted in performing the lavage is an important factor in the recovery rate of exfoliated cells. After the stomach tube had been inserted, the patient was placed in the supine position and rotated from side to side while the operator carried out the lavage.

Patients were required to fast for 8 to 12 hours before instrumentation, and the authors learned that any degree of pyloric obstruction was a contraindication to performance of these tests. Nembutal was given orally the night before and on the day of the procedure. Morphine and atropine were given hypodermically half an hour before the test. Pontocaine (2%), spray or gargle, was found useful as a local anesthetic in facilitating instrumentation. Because the authors believe that establishing rapport with the patient is an important factor in the success of these tests, all patients were interviewed the day before the procedure and the tests to be conducted the following morning were briefly described. In this way, patient cooperation was enhanced and apprehension was reduced to a minimum.

Lavage specimens were immediately transferred to iced containers and centrifuged within 10 minutes. Three smears were prepared from the centrifuged specimens and were placed immediately in equal parts of 95% alcohol and ether for fixation. Three glass slides were similarly prepared from the brush specimen.

The authors adopted and abbreviated a system of reporting cytologic diagnoses as suggested by Papanicolaou. The Papanicolaou system is cumbersome and contains equivocal reports which are of no real value to the clinician. For practical purposes, therefore, only Classes 1 and 4 have clinical usefulness. This system is as follows:

- Class 1. Absence of abnormal or atypical cells
- Class 2. Atypical cells present, not suggesting neoplasm
- Class 3. Cells with abnormal features suggestive, but not diagnostic of neoplasm
- Class 4. Tumor cells present

The present analysis combines the results of surgical treatment, follow-up clinical visits, roentgenograms, and correspondence.

The over all accuracy in both malignant and benign lesions was 90%. As reported by other investigators, a greater degree of accuracy was obtained in patients with benign than in those with malignant lesions. The accuracy of results in gastric cytology is dependent upon the careful rapid collection and processing of the material by well trained, interested personnel.

Gastric lavage with physiologic saline solution is a simple, comparatively reliable method for cytologic examination. Abrasive techniques, in the hands of the authors, have not proved to be as practical or reliable as gastric lavage. It appears that the circumstances in which gastric cytology is most useful are to substantiate the clinical impression of a benign lesion, to enhance the clinical impression of a malignant lesion and, on occasion, to diagnose an early unsuspected gastric cancer.

Although gastric cytologic study is not considered a substitute measure for gastroscopy or roentgenography of the stomach, the authors believe that as experience accumulates with this method of investigation, its position as a reliable supplement to other forms of investigation of gastric disease will become increasingly apparent.

This study contributed positively to the diagnosis of cancer in 4 cases later confirmed by operation in which the x-ray diagnosis was benign disease or was equivocal. But more frequently, it strengthened a clinical impression of a benign lesion, resulting in continued conservative management and the avoidance of surgery without harm to the patient. A prolonged follow-up study of these patients will be necessary before more definitive conclusions can be presented.

It is hoped that gastric cytology will continue to be actively supported so that more valuable statistical information may become available. (Crozier, R. E., Middleton, M., Ross, J. R., Clinical Application of Gastric Cytology: New England J. Med., 255: 1128-1131, December 13, 1956)

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### Pulmonary Cryptococcosis

*Cryptococcus neoformans* is a fungus that has a predilection for the central nervous system, lungs, and skin. As cryptococcal infections in man have been recognized more frequently in recent years, surgical interest in these lesions has increased. To date, medical control of cryptococcosis has been possible only rarely and the prognosis becomes almost hopeless once the disease has become disseminated.

*Cryptococcus neoformans* or *Torula histolytica* is a nonchlorophyll-producing plant which reproduces only by budding. As the reproductive cycle is always asexual, the *Cryptococcus* is classified with the Fungi Imperfecti, as are most pathogenic fungi. The organism is a spherule varying in size from 5 to 20 microns. On ordinary media, it does not produce



the elongated vegetative form known as the mycelium. Each organism is surrounded by a large gelatinous capsule easily demonstrated by an India ink preparation.

The *Cryptococcus* grows well on Sabouraud's glucose agar at room temperature, less well at 37° C., and is killed at 40° C. At room temperature, the early yeast-like colonies may be white, wrinkled, and granular, but on further growth, they become mucoid, slimy, and moist with brownish discoloration. If grown at 37° C., the colony is light cream to brown in color, mucoid, and slimy so as to resemble Friedlander's bacillus.

Cryptococci have been found occurring abundantly as saprophytes in every part of the world. The mode of transmission is unknown and it is only rarely pathogenic for man. It is not transmitted from man to man nor does it appear to have been transmitted to man from infected animals.

Ordinarily, it is thought that the fungus enters the body through the lungs, although it may enter through the skin or intestinal tract. Primary pulmonary cryptococcosis is relatively common and has been seen frequently preceding or coexisting with the cryptococcal meningitis which is the most common form of the disease and is almost universally fatal. After the primary infection of the lung, the spread is probably by the blood and lymphatics.

The onset of the disease is usually insidious and varied, depending on the parts attacked. In the lungs, the clinical picture usually suggests tuberculosis or a tumor. A cough may develop with little or no expectoration, fever, or night sweats. There may be mild chest pain, fatigability, and weight loss. Many patients, especially in the tropics, develop chronic bronchitis. Physical examination will usually disclose no abnormal signs other than a few bronchial or sub-crepitant rales at the lung bases. Ordinarily, the blood picture varies little from normal, although occasionally even a marked leukocytosis may be noted.

The disease may run its course in a few weeks or months or it may persist for many years. The infection usually pursues a slow and benign course until the central nervous system is invaded. Once this has occurred, the clinical course of the patient is steadily and more rapidly downward with a picture of meningitis, encephalitis, or brain tumor.

The diagnosis may be difficult because, early in the pulmonary infection, organisms are not present in the sputum although they appear during the latter stages of the disease. Present immunological tests and skin tests are of limited value, if any. Once meningitis has developed, organisms may be found in the spinal fluid. Within the lung, viscera, lymph nodes, or skin, diagnosis is usually made by biopsy or resection. No one has as yet reported making the diagnosis of localized pulmonary cryptococcosis prior to operation.

Early x-ray film findings, as reported by Greening and Menville, show pulmonary involvement to be greatest at the lung bases. There may be patches of homogenous consolidation with little surrounding reaction. All of these become confluent with the formation of cavities of varying sizes. Healing processes are noted with marked fibrosis. Usually, only slight

hilar lymph node enlargement is present and bone involvement is rare. Many cases have been noted with solitary lesions in the lung. Most of these have been solid lesions varying in size from approximately 2 to 8 cm. They were localized, although not definitely circumscribed, and there was nothing diagnostic about the lesion.

In a recent review of 220 published cases of cryptococcosis, Carton found only 33 patients alive at the time of the reports. Of this group, 14 had central nervous system involvement and only one could be considered cured. However, of 19 patients with non-central nervous system involvement, 13 could be considered cured. These included lesions of the bone, scalp, skin, lung, and nasopharynx, most of which had been treated by excisional therapy.

Innumerable drugs have had a clinical trial, including the iodides, actidiones, sulfonamides, broad spectrum antibiotics, stilbamidines, the heavy metals, various vaccines, and even fever therapy—all with limited value. Because of the almost universal ineffectiveness of the wide variety of drugs used in the treatment of central nervous system and disseminated cryptococcosis, the authors believe that it is important to stress the early surgical attack on localized lesions.

The medical outlook at the moment is not cheerful. Once dissemination or meningitis has occurred, this disease becomes almost 100% fatal. The encouraging aspect has been the extremely high percentage of successful cures with early surgical removal of the localized lesions, predominantly those of the lung. Of a total of 14 reported resections for cryptococcosis of the lung, so far as is known in a limited follow-up, 10 have done well. The correct preoperative diagnosis has not been made in any case treated by resection. In none reported has cryptococcosis even been suspected prior to surgery. Apparently, once the sputum contains *C. neoformans*, the disease process is too generalized for successful resections. In most instances, the preoperative diagnosis has been that of tumor or chronic infection, such as tuberculosis. The excellent prognosis of these cases when treated by early resection gives another reason for the early surgical removal of all lesions of the lung persistent after brief medical treatment. (Webb, W. R., Biggs, R. H., Pulmonary Cryptococcosis: Dis. Chest, XXX: 659-666, December 1956)

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#### Wernicke and Korsakoff Syndrome

From time to time, it has been suggested in the literature that Wernicke's and Korsakoff's syndromes may be related. "Acute hemorrhagic polioencephalitis superior" has been firmly established as a distinct clinical and pathologic entity since its original description, in 1881, by Wernicke.



The characteristic picture of ophthalmoplegia, ataxia, confusional mental state, and often, peripheral neuritis, occurring predominantly in alcoholic patients, and the necropsy findings of acute hemorrhagic lesions in the periventricular and periaqueductal areas of the thalamus, hypothalamus, and brain stem are well known.

Korsakoff's psychosis, originally described in 1887, characterized by memory impairment, temporal disorientation, and confabulation, with or without peripheral neuritis, also occurs most frequently in alcoholic patients. Although this syndrome is more prevalent than Wernicke's form, it is clinically less specific and has not been defined adequately from a neuropathologic viewpoint.

The purpose of the present study was to determine, if possible, the validity of the suggestion that there is a relationship between the two syndromes and to establish, on the basis of a large series of cases, the neuropathology of Korsakoff's psychosis.

A thorough review was made of 70 patients who showed the clinical picture of Korsakoff's psychosis. There were 52 (74%) males and 18 (26%) females. Severe chronic alcoholism was confirmed in 63 cases (90%); the remaining 7 patients (10%) were nonalcoholics, but showed prolonged malnourishment which in 4 of them was associated with carcinoma of the gastrointestinal tract. All patients had been committed to institutional care because of mental deterioration which was characterized by impairment of memory in every case and associated with disorientation for time in 66 cases (94%). Confabulation was described in 23 (33%), nineteen (27%) exhibited paranoid delusional features, and 9 (13%) had hallucinations.

Convulsive seizures occurred in 5 cases (7%). One of these patients had had idiopathic epilepsy since childhood; two had post-traumatic encephalopathy, and one had cerebral arteriosclerosis with multiple cortical infarcts. Family histories were uniformly noncontributory for the entire group.

None of the cases in this series showed the acute hemorrhagic brain pathology of Wernicke's encephalopathy, but revealed subacute or chronic degenerative changes. These might be interpreted either as residual effects of previous acute Wernicke's disease or as chronic slowly progressive degeneration.

Although all of the 70 cases manifested the clinical picture of Korsakoff's psychosis, 7 (10%) showed, in addition, chronic neurologic signs of a complete, and 15 (21.4%) of a partial, Wernicke syndrome. Thus, 22 cases (31.4%) exhibited neurologic signs other than peripheral neuritis. It is likely, however, that adequate neurologic examinations were not performed and only gross signs of central nervous system disturbances were reported. For example, clinical evidence of cerebellar dysfunction was not recorded in one-half of the 24 cases that showed cerebellar degeneration histologically. Likewise, peripheral neuritis which was noted in 50% presumably occurred more frequently in less severe form, but was overlooked.

The clinical association of the two syndromes has been frequently cited in the literature. All reports, however, have considered the two conditions as separate disease entities. The present study shows that they may occur simultaneously in acute or chronic form, either as complete or as incomplete syndromes. The implication is clear that each syndrome represents merely a different clinical expression of the same disorder. The particular clinical syndrome appears to be dependent only upon the tempo, severity, and extent of the underlying disease process.

The etiology of the Wernicke and Korsakoff syndromes is unknown, although there is available considerable evidence which would seem to implicate dietary deficiencies, specifically that of thiamine.

From this study, it is evident that the consistent brain pathology of Korsakoff's psychosis is characterized primarily by degenerative changes in the periventricular and periaqueductal gray matter, the mamillary bodies, and the dorsomedial nuclei of the thalamus, and, less frequently, in the brain stem and cerebellum. The distribution of the lesions is identical with that of Wernicke's syndrome. There is no evidence of specific cortical pathology in this condition. The findings indicate that the Wernicke and Korsakoff syndromes are identical disorders, probably resulting directly or indirectly from thiamine deficiency. The two syndromes merely depend on the acuteness or chronicity, respectively, of the underlying disease process. Previous investigations indicate that early and adequate treatment with thiamine hydrochloride frequently may bring about a remission of symptoms of the acute Wernicke syndrome, but rarely improves the Korsakoff psychosis. The invariable involvement of the periventricular hypothalamic and thalamic regions in these cases, and particularly the mamillary bodies, demands strong consideration in regard to pathogenesis of the mental symptoms, especially since they cannot be attributed to cortical pathology. (Malamud, N., Skillicorn, S. A., Relationship Between the Wernicke and the Korsakoff Syndrome: Arch. Neurol. & Psychiat., 76: 585-595, December 1956)

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### Hypertrophic Osteoarthropathy

Toward the end of the 19th century, the clinical entity of hypertrophic osteoarthropathy was first brought to the attention of the medical world. Since that time, numerous theories have attempted to explain the mechanisms involved, yet the exact pathogenesis still remains obscure.

Early in the history of this disease, suppurative conditions, such as bronchiectasis, empyema, lung abscess, and pulmonary tuberculosis, were among the principal primary diseases responsible for the arthropathy. As the incidence and severity of these conditions have shown a gradual decline, bronchogenic carcinoma has come to be recognized as the principal cause.



This is of prime importance because the signs and symptoms of hypertrophic osteoarthropathy may appear long before the lung lesion can be detected. Therefore, the early recognition of this bone and joint syndrome may be a clue to the earlier diagnosis of the pulmonic lesion, hence earlier treatment and possible decrease in the over all mortality rate of cancer of the lung.

Hypertrophic osteoarthropathy may be defined as a chronic proliferative subperiosteal osteitis involving the distal ends of the extremities, manifested by clubbing of the fingers, swelling, pain, tenderness, and accompanying joint disorders. For some time, the exact relationship of clubbing of the fingers to the arthropathy was not clear, but the consensus is that hypertrophic osteoarthropathy represents an extension of the process of clubbing and that these related lesions develop secondarily to the same general group of conditions, most commonly those due to chronic pulmonary, pleural, or mediastinal diseases.

The constant association of clubbing of the fingers and hypertrophic osteoarthropathy has been known for many years, but only in recent times has it been realized that the two conditions are intimately related. All authorities are agreed that the bone and joint changes represent a further extension of the clubbing process.

Although clubbing may involve one digit, as in cases following local trauma, or may be unilateral, as seen with superior sulcus tumors or aneurysms of the proximal aorta or its branches, by far the commonest variety is a symmetrical enlargement of the ends of the fingers and toes.

Six cases of bronchogenic carcinoma exhibiting various clinical manifestations of hypertrophic osteoarthropathy are presented. This syndrome is a chronic proliferative subperiosteal osteitis affecting the distal ends of the extremities. Clubbing of the fingers, swelling, pain, and joint involvement are usually present. A rare idiopathic form has been described, but most cases are secondary to some underlying pathologic process. Cardiac, hepatic, and intestinal causes have been reported, but suppurative lung conditions and, more recently, bronchogenic carcinoma are now regarded as the commonest cause. This syndrome may appear during the course of a lung cancer, but many cases may be evident long before the lung lesion can be detected. The earliest stage of osteoarthropathy is manifested by clubbing of the fingers, and all authorities agree that these two processes are intimately related.

Hypertrophic osteoarthropathy occurs in animals, but almost all attempts to reproduce it experimentally have met with failure. An increased peripheral blood flow is present, but some other unknown factor is important in the causation. Decreased arterial saturation, absorption of toxic products, endocrine imbalance, and local anoxia have been suggested, but no experimental evidence has corroborated these theories.

At first, the lesion may be asymptomatic, but as the condition progresses, severe bone pain and tenderness are present. Acute joint

manifestations are common and most cases have been wrongly diagnosed as rheumatoid arthritis. Even though the crippling symptoms have been present for long periods, surgical removal or radiation therapy of the lung cancer results in a dramatic amelioration of symptoms.

Although the syndrome of hypertrophic osteoarthropathy occurs in only about 5% of bronchogenic carcinoma, it may provide the clinician with the earliest clue to the detection of pulmonary neoplasms some time before the tumor is visible on the roentgenogram. The prompt recognition of this condition can result in earlier diagnosis and more successful treatment of a certain percentage of cases of bronchogenic carcinoma. (Shapiro, M., Hypertrophic Osteoarthropathy: Arch. Int. Med., 98: 700-709, December 1956)

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### Essential Hypertension in Infancy and Childhood

Essential hypertension is the principal cause of persistently elevated blood pressure in adults. In children, by contrast, essential hypertension is rare. Renal diseases, diseases of the central nervous system, coarctation of the aorta, and endocrine disturbances are the commonest etiological factors.

In view of the paucity of reported cases of essential hypertension in the pediatric literature, it seemed worthwhile to present the cases with this condition encountered at the Children's Medical Center, Boston. The authors emphasize the salient points in differential diagnosis and discuss the therapeutic approaches.

The accepted limits of normal blood pressure in infancy and childhood are not as clearly defined as in adults because of (1) the frequent lack of patient cooperation, especially in the infant group; (2) the need for varying cuff sizes for varying sized limbs; and (3) the increase in both systolic and diastolic pressure throughout the growth period. Nevertheless, on the basis of a few accurate series, norms for children have been established and the correct cuff width for variously sized children has been determined. Generally, blood pressure is lower in children than in adults and approaches adult levels at puberty. For purposes of simplicity, the authors have accepted on the basis of the literature cited a persistent systolic blood pressure of 130 mm. of mercury and a diastolic pressure of 90 mm. of mercury as representing the upper limits of normal.

The nine patients forming the basis of this report represent all the children of 14 years and under with this condition who were available after a careful survey of hospital records of the past 15 years. A table summarizes the most important etiological factors causing high blood pressure in children with appropriate diagnostic tests for their identification.



The authors considered their experience in the treatment of children with essential hypertension too limited for definite conclusions. A vast amount of experience, however, has been recorded in adults. From these exhaustive reports and limited experience, the present therapeutic approach has been formulated.

Mild sedation with phenobarbital, weight reduction for the obese, and superficial psychotherapy have been the mainstays of treatment for essential hypertension for many years and have played an important role in the management of patients in this group. Restriction of physical activity has been frequently advised for the therapy of hypertension in the past. The authors have found no conclusive evidence that this, in fact, benefits these patients—on the contrary, if it increases anxiety and tension, it may lead to further elevation of the blood pressure. Therefore, patients have been allowed full physical activity, with two exceptions: (1) that they cease exercise if symptoms occur—headaches, palpitation, chest pain, or dyspnea—and (2) competitive interscholastic athletics are discouraged.

Low-sodium diet has been effective in adults, but must be extremely rigid to be of value. This diet has not been practical in children because of their refusal to take such a diet and the failure of this small amount of sodium to allow for growth. Adrenalectomy has seemed to present too many problems in management to be attempted.

Antihypertensive drug therapy and sympathectomy are generally agreed to be the major treatments of benefit today. It seems wise to treat all patients with persistent hypertension with one or more of the modern drugs in an effort to lower the blood pressure and prevent progression of the disease to the malignant stage. It is recognized that many people have severe arterial hypertension for many years without complications, but at present the authors are unable to separate them from the malignant group early enough. In some cases, it will also be evident to the physician that the psychic problems induced by concern over taking medications may outweigh their potential value.

For the group with the severest hypertension, sympathectomy is probably indicated if drug therapy is not effective. As noted by Reyersbach and Butler, variable results have been obtained. On the basis of limited experience, it seems impossible to predict which patients will benefit from this procedure.

In this small series, no uniform benefit with any one therapeutic regimen was obtained. This emphasizes (1) the need for individualizing the therapy for each patient and (2) the limitations of medical management at present. (Haggerty, R.J., Maroney, M.W., Nadas, A.S., *Essential Hypertension in Infancy and Childhood: J. Dis. Child.*, 92: 535-545, December 1956)

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### Foreign Bodies in the Air and Food Passages

Questions concerning the management of foreign bodies in the air and food passages must be answered daily by pediatricians and general practitioners. The accidental swallowing of an inedible object and the choking sensation associated with the aspiration of a food particle are so common that the significance of any specific episode might easily be misunderstood. That serious sequelae and even death may follow such an accident is readily apparent when respiratory obstruction or esophageal perforation is imminent, but the fact that there may be a total lack of symptoms, even though a foreign body may be in a dangerous area, is not always appreciated.

Foreign-body accidents usually follow a fairly characteristic pattern. Coughing, choking, gagging, and wheezing indicate the initial phase of the accident. This may be followed by a symptomless interval during which the object becomes fixed in the bronchus or esophagus. The third stage of the symptoms may appear only days or weeks later as complications develop to again direct attention to the foreign body. Certain more specific symptoms depend on the location of the foreign body. Hoarseness, cough, and dyspnea result if the object is in the larynx. These same symptoms, however, may be present if a large foreign body lodges in the cervical esophagus, causing tracheal compression and an overflow of saliva into the larynx. Foreign bodies in the trachea produce an extreme wheeze and dyspnea, giving findings of bilateral pulmonary obstruction. If the object is loose in the trachea, it rattles up and down with respiration, hitting the carina on inspiration and the larynx with a painful slap during the succeeding cough or expiration. In the bronchi, an object may cause the classic symptoms of an asthmatic wheeze, obstructive emphysema, or atelectasis, depending on the degree of obstruction. In the event of a foreign body in the esophagus, the most constant symptom is difficulty in swallowing or complete inability to swallow. In some cases, the pain of swallowing is second in importance only to dysphagia.

In most cases of foreign body aspiration or ingestion, the patient is seen during the acute episode of symptoms immediately after the object has been swallowed or aspirated. A thorough search to determine its location should be begun; the history should not be ignored even though the symptoms subside temporarily.

While almost any small object may find its way into a child's air or food passage, certain foreign bodies are seen most frequently in rather definite sequences of clinical events. Safety pins, nuts, and coins are the foreign bodies most frequently found in infants and children; safety pins are seen in the pharynx, esophagus, or bronchus of children of any age, but the usual site is the esophagus of an infant 7 to 14 months old.

Nuts and other vegetable matter in the bronchi constitute an even larger problem in actual number of foreign bodies involved. Such accidents



occur in infants and children of a slightly older age group than do safety pin incidents—most commonly in children between one and three years of age. A history of severe coughing and wheezing usually typifies this foreign body accident. The fact that symptoms subside in a few hours does not mean that the object has been coughed out; rather, it indicates that the local reflexes have become fatigued and a symptomless interval has followed the initial severe symptoms. Persistence of a wheeze or a suppression of breath sounds localizes the foreign body within the bronchus; inspiration and expiration films showing obstructive emphysema confirm its presence.

Coins and other disk-like objects, such as buttons or washers, constitute the third large group of foreign bodies that children swallow. Pennies and nickels are the most common. Dimes generally reach the stomach and are passed by bowel without incident. More rarely, quarters are an endoscopic problem, because a small child generally is not given this coin and older children are less likely to insert coins in their mouths. Occasionally, two or three pennies or a nickel and a penny are swallowed together and they superimpose themselves to appear as one coin in the anteroposterior projection x-ray. Consequently, a carefully made lateral film is necessary to detect this possibility. Esophageal foreign bodies are found most frequently in the cervical esophagus at a point of normal narrowing. The strong pharyngeal muscles force the object to this point from which the weaker esophageal musculature cannot continue its progress. If foreign bodies lodge elsewhere in the esophagus, or if the child with an esophageal foreign body has been considered to be a "feeding problem," fluoroscopic studies of the esophagus should be made after the object has been removed to search for an esophageal stricture. Such previously undetected congenital lesions are often found responsible for foreign body accidents.

While safety pins and coins are the objects most frequently encountered as foreign bodies in the esophagus, vegetable foreign bodies constitute the most common intrabronchial problem. Hardware, such as tacks, nails, or screws, and parts of metal or plastic toys comprise the majority of the remaining bronchial foreign body problems. Deciduous teeth aspirated during a general anesthetic are serious but, fortunately, rare foreign bodies.

To establish the diagnosis of a foreign body in the air or food passages, one must carefully evaluate the history, the symptoms, and the physical and roentgenographic studies, and then confirm or refute the diagnosis by endoscopic examination. A positive history of choking or gagging, or the statement of the patient, no matter how young he may be, that he has swallowed something must never be ignored.

The treatment of foreign bodies in the air or food passages consists of their reasonably prompt removal under conditions which will insure the maximum safety and minimum trauma to the patient. For some reason, foreign body accidents are often classified as urgent emergencies, leading to hasty inadequate study and poorly prepared improper attempts at removal.

It may be stated that, unless actual or potential respiratory obstruction is present, a foreign body problem is not a true emergency. True emergencies exist only when a foreign body is lodged in the larynx or trachea, or when a large object is in the cervical esophagus and compressing the trachea. A bean or kernel of corn in the trachea or bronchus falls into this category, because it begins to swell as it absorbs the moisture of the surrounding tissues. A marble or a jack-stone in the esophagus is usually an urgent emergency because it causes respiratory obstruction due to compression of the trachea. Other foreign body problems may be studied without the pressure of considering immediate endoscopy, and the procedure of bronchoscopic or esophagoscopy removal may be scheduled for a time when proper personnel are available, instruments are checked, and techniques have been tested.

Foreign bodies in the air and food passages constitute a constant pediatric problem. They may be responsible for severe acute respiratory obstruction or they may produce only minimal symptoms that progress so slowly that the foreign body incident is not realized. Usually, a positive history of aspirating or swallowing a foreign object can be obtained; a negative history is valueless or misleading. The disappearance of symptoms is no indication that the accident needs no further investigation—a symptomless interval usually follows the severe initial symptoms. Both stethoscopic and roentgenographic examinations are necessary to determine the presence and location of an aspirated foreign body. A history of prolonged feeding time, a "feeding problem" child, and previous similar episodes suggest esophageal stenosis. Foreign bodies in the stomach and intestines generally pass without incident if the child continues his normal diet. Fluoroscopic observation of progress should consider irradiation dosage. Bobby pins in the stomach present a special problem in small children and can be removed perorally by magnets.

The initial symptoms of a foreign body in the air or food passage are coughing, gagging, choking, and wheezing. These are followed by a symptomless interval when the object becomes fixed in the bronchus or esophagus; finally, if not extracted, the symptoms of complications develop (atelectasis, esophageal obstruction, infection, hemorrhage, et cetera).

Diagnosis depends on the history, physical findings, radiologic study, and endoscopic examination. Overlooked foreign bodies are often responsible for extensive pulmonary or esophageal pathology and will be discovered only by endoscopic investigation. Foreign body problems are acute emergencies only if respiratory obstruction is present or pending.

The treatment of foreign bodies in the air and food passages consists of endoscopic removal under visual or fluoroscopic guidance by an endoscopic team with adequate instrumentation. (Holinger, P.H., Johnston, K.C., *Foreign Bodies in the Air and Food Passages: Postgrad. Med.*, 20: 619-624, December 1956)



### Pilonidal Sinus

The literature on pilonidal sinus has assumed voluminous proportions, replete with many cryptic and esoteric allegations as to etiology. Numerous articles cite the tremendous cost in man days from hospitalization of servicemen with this condition, while the incidence in civilian life is low. This means in part that soldiers are hospitalized for infections which could be treated by civilians in the home. To a greater degree, it means that soldiers in a barrack or field environment suffer somewhat in personal hygiene and, in addition, they are exposed to greater trauma from truck and jeep riding. This increased incidence of hospitalization has led to a wide variety of advocated procedures, including unroofing, excision, and suture of skin edges to fascia in midline, excision and open packing, employment of flaps of gluteal muscles or fascia, use of rotated or sliding flaps of skin and subcutaneous tissue, block excision and primary closure, simple incision and drainage of abscesses as they develop, and simple incision with insertion of the head of a mushroom catheter which is extruded as the wound heals from the depths. The simple fact that so many varied procedures have been advocated by such a large group of authors is clear indication that no one procedure is outstandingly successful in avoiding morbidity and recurrent difficulty. Some authors have emphasized the minutiae of preoperative and postoperative care; others have stressed the role of hemostasis in prevention of "recurrence," while still others urge the antibiotics as the key to good results. A common sense note is sounded by one author who states that the operation itself is not so important as the care with which the procedure is done, and that, although there are more wound complications with the primary closure, the end-results are about the same whether an open or closed procedure is employed.

Until recently, at Brooke Army Hospital, the authors had been following the policy of incision and drainage of pilonidal abscesses, reserving an unroofing or marsupialization procedure for recurrent cases. Although the end-results have been entirely acceptable, a procedure employing primary closure would seem to offer better healing in a shorter time, provided that the usual difficulties of hematoma formation, wound disruption, and recurring infection can be controlled. The authors have not been of the opinion that the bacteriological problem was a primary one, and, therefore, they have placed no reliance on local or general use of antibiotics or other drugs. They have not believed that the operative failures were "recurrences" of the cyst or sinus, but that they represented failures of good wound healing for a variety of reasons. These factors include poor local blood supply (often no bleeding points need control), motion of the parts as in walking and tension as in sitting, favorable environment for infection because of the proximity of the anus together with the natural warmth and moisture of the area, and especially faulty wound closure leaving dead spaces which result in

hematoma accumulation, sinus formation with epithelization, and chronic infection in the granulating tract. The authors' effort, therefore, has been directed toward careful wound closure to avoid dead space and hematomas, the avoidance of suture material for hemostasis, and the use of wire sutures for accurate wound approximation, with "pull-out" when the wound is solid.

In the case with minimal acute infection, an elliptical excision is done, removing little skin and only enough tissue to remove completely all the lesion down to the fascia. The specimen is inspected and opened to be sure that no tract has been transected. Hemostasis is secured by temporary use of a moist warm gauze pack. A No. 28 wire suture is then introduced at the lower angle of the wound through normal skin and is placed as a running mattress stitch the length of the wound in the manner of a subcuticular stitch. This suture is placed at the level of the fascia and is brought out at the upper angle of the wound through normal skin. Three more such continuous mattress wire stitches are placed in layers from deep to superficial, the last one being subcuticular in position. These stitches are pulled tight as they are placed, great care being taken to see that there are no remaining dead spaces. The wires then are passed through a small piece of sponge rubber and a button. A lead shot is crimped onto the wires and a small dry dressing is placed. Postoperatively, the authors allow the patient to assume any comfortable position, make no effort to inhibit bowel movements, allow the patient to be out of bed as soon as sutures are removed, and remove the wire sutures by the "pull-out" method at about 10 days if the wound looks clean and solid. Should there be some inflammatory reaction, there is no reason why the sutures cannot be left in place while this complication is managed by local application of heat. The authors have not used antibiotics either preoperatively or postoperatively.

This preliminary report seemed to be indicated because the first six cases completely justified the authors' original assumptions and expectations. The group is small, but the clinical results have been uniformly good and the follow-up ranges downward from 6 months. The only complication has been a small area of pressure necrosis in each case at the points where the wires emerge through normal skin, but this has not been a significant difficulty and has not interfered with solid wound healing. Each patient has been in the hospital about one month and has lost a total of about 6 weeks from duty. An extensive study of this subject with development of a sizable series for comparison with previous cases is planned.

This is a preliminary report on a method of primary closure, avoiding all retained suture material in the wound and depending upon "pull-out" wire sutures placed in the long axis of the wound rather than transversely. These sutures can be left in place until wound healing has been completed even if infection supervenes postoperatively.

In a small series, the results have met expectations and the short term follow-up is encouraging. (Colonel W. F. Bowers and Captain W. S. Williamson, (MC) USA, Pilonidal Sinus: Arch. Surg., 73:931-934, December 1956)



### Solitary Pulmonary Nodule

This report represents the culmination of a study initiated in 1946 concerning the significance of the solitary pulmonary nodule. This series of 215 personally resected, noncalcified pulmonary nodules correlates well with the literature in illustrating both the strong malignant propensity of these nodules as well as the improbability of distinguishing the benign and the malignant lesion by any means short of thoracotomy.

In this series, 47% were malignant, 37% being bronchial carcinomas. Clinical, laboratory, and roentgenologic data have been elaborately analyzed without finding any sign reliable enough to justify medical observation unless it be calcification within the nodule. After polling the members of The American Association for Thoracic Surgery on this highly controversial issue, namely, the reliability of calcification as an indication of benignity, the authors were convinced that minimal calcification within a solitary pulmonary nodule, especially when no more than a fleck or two, is unjustifiable grounds for assuming it to be benign. There remain certain patterns of calcification that render the possibility of malignancy so slim, however, that further observation seems warranted. These include those nodules with a large central calcific core and diffuse calcific stippling, those with an inner ring or outer rim of calcium and, of course, those that are completely calcified.

In this survey, the two groups deserving the greatest attention were the bronchial carcinomas and the granulomas which together comprise 75% of total nodules. The authors' primary concerns were the prognosis of the primary carcinomatous nodules and the etiology of the granulomas.

In determining survivorship of those with bronchial carcinoma, cell type appeared to have far less influence than did either the presence of symptoms or time lapse between radiographic discovery of the lesion and operation. Findings indicate that the small solitary circumscribed asymptomatic bronchial carcinoma recently detected in a fortuitous chest x-ray has a 75% chance of surviving five years if operated upon promptly. Lobectomy appears to be an adequate cancer operation in properly selected cases.

Early in this study, all of the solitary granulomas, because of their gross appearance if nothing else, were presumed to be "tuberculomas." Re-examination of the tissue blocks in these cases by special staining techniques has been most revealing. Fifty-five percent of the granulomas studied contained Histoplasma and 7%, Coccidioides, in contrast to but 17% in which a tuberculous etiology could be established. The implications of these findings have been discussed in detail as have the various other types of solitary pulmonary nodules.

The authors, therefore, conclude that every solitary, noncalcified pulmonary nodule demands thoracotomy, that for those with bronchial carcinoma the absence of symptoms and promptness of surgery are apt to determine the chance for cure, and that careful histologic study of the

pulmonary granulomas will reveal the majority to be of fungal rather than tuberculous origin. (Davis, E. W., Peabody, J. W. Jr., Katz, S., The Solitary Pulmonary Nodule - A Ten-Year Study Based on 215 Cases: J. Thoracic Surg., 32: 765-766, December 1956)

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#### Symposium - First Naval District

The Fifth Annual Military Medico-Dental Symposium under the auspices of the Commandant, First Naval District will be held at the U.S. Naval Hospital, Chelsea, Mass., and civilian institutions in Boston, 20 - 22 March 1957. The theme of the Symposium is The Worldwide Significance of the Preventive Aspects of Military Medicine and Dentistry. The program has been planned to provide the Reserve and Regular Medical Department officers with information regarding current concepts in varied fields of endeavor in the Medical and Dental Services of the Armed Forces.

The meeting on the first day will be conducted at the U.S. Naval Hospital in Chelsea. On the morning of the second day, a tour of the School of Public Health, Harvard University, will be conducted by Doctor John C. Snyder, Dean of the School, following which lectures will be given at the Jimmy Fund Auditorium. The third day, the lectures will be given at the Jimmy Fund Building, the Joslin Auditorium of the New England Deaconess Hospital, and the U.S. Naval Hospital, Chelsea.

Among prominent guests and speakers on the opening day are the Honorable Frank Berry, Assistant Secretary of Defense (Health and Medical); Rear Admiral Bartholomew W. Hogan, MC USN, Surgeon General of the Navy; Major General Silas B. Hays, MC USA, Surgeon General of the U.S. Army; Doctor Howard Root, President, Massachusetts Medical Society; Captain Shields Warren, MC USNR, Professor of Pathology, Harvard Medical School; Doctor Chester S. Keefer, Director, Boston University School of Medicine; and Agnes Ohlson, R.N., President, American Nurses' Association. Captain R. Cannon Eley, MC USNR, Chief of Isolation Service, Children's Hospital, Assistant Clinical Professor of Pediatrics, Harvard Medical School, is serving as general chairman of the Symposium.

This Symposium has been approved for retirement point credit for those in attendance who are on the Active Status List in the Armed Services Reserve Program, provided they register with the authorized Military Representative assigned the duty of recording daily attendance. Programs and additional information may be obtained by addressing the District Medical Officer, First Naval District, 495 Summer Street, Boston 10, Mass.

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Instructor Training for Group X -  
Hospital Corps Personnel

Indispensable to a successful training program and high quality instruction is the fundamental requirement for large numbers of well trained and experienced instructor personnel. This is particularly important with respect to implementing the inservice training program for Group X, Hospital Corps personnel, and in fulfilling the requirement for advancement in rating as pertains to giving instruction to individuals and groups as delineated in the Manual of Qualifications for Advancement in Rating (NavPers 18068) (Revised). The requirement for the foregoing can be achieved by either formal or on-the-job instructor training as outlined below.

Formal Training. All commands are encouraged to request quotas for class C-1 Instructor School from the Bureau of Naval Personnel for key personnel, not already qualified as instructors, who are actively engaged in training. The Bureau of Naval Personnel Manual, and BuPers Instruction 1306.22B, clearly outline the qualifications for instructor candidates. In requesting quotas for formal training, attention is invited to the Catalog of U.S. Naval Training Activities and Courses (NavPers-91769B) and BuPers Instruction 1500.25B.

On-the-Job Training. Recognizing that from the operational point of view and due to quota limitations it is not always feasible to send large numbers of Hospital Corps personnel to class C-1 Instructor School over a short period of time, it is recommended that each command establish an on-the-job training program in order to train as many key hospital corpsmen in Instructor Technic as possible. It is recommended that the Manual for Navy Instructors (NavPers 16103-B) be utilized as the basic text for this course so that reasonable standardization in training may be achieved. This publication should be utilized as a self-study text for all instructors. Additional publications, such as Instructor Training (NavPers-92050) and the Naval Training Bulletin are highly recommended. For further information relative to the foregoing training program, consult BuPers Instruction 1306.22B.

(ProfDiv, BuMed)

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda, Md., giving full name, rank, corps, and old and new addresses.

From the Note Book

1. Effective January 1, 1957, the Free Indemnity of \$10,000 (free insurance) will no longer be in existence. Personnel entering the service prior to April 25, 1951, who otherwise qualify for the National Service Life Insurance and who have either surrendered a permanent plan or waived the premium payments of their term insurance will be required to either reinstate their policy or resume payments of their premium by May 1, 1957, in order to qualify under Servicemen's and Veterans' Survivor Benefits Act. This Act, in addition to eliminating the Free Indemnity, establishes a new system of benefits payable to survivors of military personnel. To servicemen and their families, it is one of the most significant pieces of legislation to be enacted by Congress for many years. (TIO, BuMed)
2. The Servicemen's and Veterans Survivor Benefits Act, PL 881, provides coverage by the Social Security Program for certain service personnel. Commencing on January 1, 1957, all officers, including retired and Fleet Reserve members on active duty or active duty for training, will have the required tax withheld semimonthly. (TIO, BuMed)
3. Captain George N. Raines, MC USN, was elected President of the American Board of Psychiatry and Neurology at its annual meeting, December 9 - 11, 1956. Captain Raines is the first military medical officer on active duty to be so honored. His term of office is for one year beginning December 9, 1956. He has served as a Director of the Board since 1949 and served as Vice President last year. He is elected to the Board as a representative of the Section on Nervous and Mental Diseases of the American Medical Association. (TIO, BuMed)
4. It is particularly significant, not to say educational, to know that the countries of the Arabian Peninsula as well as Iran, Iraq, Egypt, Jordan, Israel, Lebanon, Syria, Cyprus, and Turkey are all in the Near East. Ceylon, Sikkim, Bhutan, Nepal, Afghanistan, Pakistan, and India are in the Middle East. Indonesia, Malaya, Burma, Thailand, Indochina, the Philippines, Japan, Korea, Mongolian Republic, and China are in the Far East. This is the geographic division according to the National Geographic Society. (TIO, BuMed)
5. A study of lung cancer in women based on environmental data of proved lung cancer in women was made. The purpose was to study the role of factors previously examined for men, so special emphasis was placed on smoking, occupations, and residence. A moderate increase in the incidence of lung cancer in women was found, but the rate of increase was far less dramatic than that for men. (New England J. Med., 13 December 1956; E. L. Wynder, M.D., et al.)



6. In the majority of cases of vesical neoplasm, transurethral excision of the tumor is the most effective method of treatment. Total cystectomy and diversion of urine of an appropriate type are useful in a small proportion of cases. When total cystectomy seems undesirable, segmental resection can be employed in those cases in which transurethral operation is technically difficult or impossible. A combination of transurethral excision and irradiation is the method of choice of the majority of urologists today. Irradiation by means of the cobalt bomb seems most promising. (J. Internat. Coll. Surgeons, December 1956; G. J. Thompson, M. D.)
7. Pulmonary dysfunction is classified as disorders of ventilation, diffusion, and perfusion. An attempt is made to place certain pathologic entities into these categories. Strict delineation of a given disease under a single functional classification is impossible, in that many diseases produce abnormalities in 2 or 3 of these categories. Despite the numerous contributions in the field of anatomicophysiologic correlation of pulmonary diseases, much is not well understood. This field should form a fruitful source for future investigation. (Arch. Path., December 1956; J. R. McDonald, M. D., R. D. Miller, M. D.)
8. Hypernatremia accompanying infant diarrhea occurs in patients who develop water depletion due to losses in stool and insensible losses and to the high renal water requirements of infants and because of sodium administration in excess of the excretory capacity of the kidney. (Am. J. Dis. Child., December 1956; A. L. Skinner, M. D., F. C. Moll, M. D.)
9. This article presents conclusions based on 600 tonographic studies on 239 eyes with various types of glaucoma with use of the method described by Grant. (Arch. Ophth., December 1956; H. G. Scheie, M. D., R. W. Spencer, M. D., E. D. Helmick, M. D.)
10. A simple easy-to-operate explosion-proof electrical defibrillator is described. This defibrillator allows a choice of 3 voltages of predetermined durations which should allow maximum successful defibrillation with minimal cardiac damage due to burns. (Arch. Surg., December 1956; C. L. Claff, M. A., et al.)
11. The treatment of nonmalignant diseases of the thyroid gland is discussed in Postgrad. Med., December 1956; B. M. Black, M. D.
12. The method of urological examination, treatment of the neurogenic bladder, and a bladder training program are presented in Arch. Phys. Med. & Rehab., December 1956; A. O. Posniak, M. D., et al.)

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## MEDICAL RESERVE SECTION

### Terminology and Definitions Used in the Naval Reserve

BuPers Instruction 1001.5B outlines the following definitions which are commonly used throughout the Naval Reserve Program. A portion of these terms are reprinted herewith for information:

Active Duty - full-time duty with the active military service of the United States other than active duty for training.

Active duty for training - full-time duty with the active military service of the United States for training purposes.

Inactive duty training - any of the training, instruction, duty, appropriate duties, or equivalent training, instruction, duty or hazardous duties performed with or without compensation by members of the Naval Reserve, as is prescribed by the Secretary of the Navy and in addition thereto, includes the performance of special additional duties as may be authorized by competent authority of such members on a voluntary basis in connection with the prescribed training or maintenance activities of the unit to which Reservists are assigned. Work or study performed by such Reservists in connection with approved correspondence courses shall be deemed inactive duty training for which compensation is not authorized.

Officer - unless other wise specified, means a commissioned or warrant officer.

Partial Mobilization - that action taken by the Congress or the President pursuant to any provision of law to effect the entry into active military service of the United States of such units and members thereof, or of such members not assigned to units organized for the purpose of serving as such, of any reserve component of the Armed Forces of the United States as are required to effect a limited expansion of the active Armed Forces of the United States.

Allowance - the number of personnel by grade and designator or rating authorized to be attached to pay units of the Naval Reserve in drill pay billets.

Allowed quota - the number of personnel authorized to be associated in pay or nonpay status with pay units of the Naval Reserve.

Attached - assigned to a drill pay billet within the authorized allowance.

Associated - assigned to an associate pay or associate nonpay billet within the allowed quota.



Appropriate duty - that duty authorized to enable the Commandants to accomplish various special tasks in connection with the Naval Reserve Programs.

Organized Naval Reserve - comprised of all units included in the approved Table of Organization, both pay and nonpay, which follow the approved curriculum of a supervised training program.

Active Status Pool - comprised of all personnel who are in an active status except those on active duty and those in a drilling unit in the Naval Reserve Program.

"Active Status" - the status of all Ready Reservists and those Standby Reservists who are not on the Inactive Status List. Such Reservists are identified USNR-R, USNR-EV, or USNR-S1.

"Inactive Status" - the status of members of the Standby Reserve who are officially placed on the Inactive Status Lists in accordance with regulations prescribed by the Secretary of the Navy. Such Reservists are identified as USNR-S2.

Inactive Status List - personnel of the Naval Reserve in an inactive status who have been placed thereon in accordance with the regulations prescribed by the Secretary of the Navy.

Suspended Status List - enlisted personnel of the Naval Reserve who have been placed thereon pursuant to specific instructions of the Chief of Naval Personnel. They are not eligible for participation in a pay program nor for reenlistment or extension of enlistment.

Ready Reserve - those members of the Naval Reserve who are liable for active duty either in time of war, in time of national emergency declared by the Congress or proclaimed by the President or when authorized by law.

Standby Reserve - those members of the Naval Reserve who are liable for active duty only in time of war or national emergency declared by the Congress, or when otherwise authorized by law.

Retired Reserve - those members of the Naval Reserve whose names are placed on Retired Reserve Lists in accordance with regulations established by the Secretary of the Navy. Retired members of the Reserve are liable for active duty only in time of war or national emergency declared by Congress or when otherwise authorized by law.

"Retired Status" - the status of all members of the Naval Reserve placed on the Retired Reserve Lists in accordance with regulations prescribed by the Secretary of the Navy, which includes members on the Honorary Retired List as well as those in Retired Pay Status. Such Reservists are identified as USNR-Ret.

Appropriate duty pay pool - those personnel issued orders authorizing the performance of periods of appropriate duty with pay.

Programs. To facilitate training and administration, the Organized Naval Reserve comprises two components - the Naval Reserve Programs

and Organized Naval Air Reserve. Units within these components are either "paid" drilling units or "nonpaid" drilling units.

### 1. Naval Reserve Programs

- a. Paid drilling units are termed Brigades, Battalions, and Divisions, with the Division being the basic unit. Where two to four Surface Divisions are located in Naval Reserve Training Centers, they are normally formed into a Battalion, and where two or more Battalions are located, they form a Brigade. Each unit is established under a Commanding Officer and has a prescribed allowance. The chain of command is from the Commandant of the Naval District to the Commanding Officer of the Division via any intermediate Brigade or Battalion Commander.
- b. The nonpaid drilling units are called companies or platoons. There is a Commanding Officer assigned to each company and platoon who is responsible directly to the District Commandant for the administration and training of his unit. There is no grade or specialty allowance prescribed for these units, but a minimum on board strength must be maintained.
- c. To provide identity with mobilization requirements, the different programs shall be grouped as Fleet Programs, Fleet Support Programs, Shore Establishment Programs, Schools and Special Programs.

### 2. Organized Naval Air Reserve

Paid drilling units for the Organized Naval Air Reserve consist of Air Wing Staffs, Squadrons, Auxiliary Air Units, Auxiliary Ground Units, and Bureau of Aeronautics Reserve Training Units. Each of the Naval Reserve Air Stations and Naval Air Reserve Training Units supports an Air Wing Staff and varying numbers of fleet type aircraft squadrons. These are supplemented by Auxiliary Ground and Air Units. In many cases, the Auxiliary Units increase the Organized Naval Air Reserve Program's geographical coverage by being located off station at outlying facilities.

Training Categories for the Naval Reserve are prescribed as follows:

1. Group I - indicates the highest priority of requirement for training to meet mobilization needs (includes Brigades, Battalions, Divisions, Air Wing Staffs, Squadrons, Auxiliary Ground Units, Auxiliary Air Units and Bureau of Aeronautics Reserve Training Units).
2. Group II - indicates the second highest priority or requirements for training to meet mobilization needs (includes Companies and Platoons).



3. Group III - indicates the third priority of requirement for training to meet mobilization needs (this includes those Reservists who do not participate in any drills or periods of appropriate duty with pay, but take active duty for training, correspondence courses, and extension courses, and those that do not participate in inactive duty training). Personnel who do not participate in inactive duty training are retained in this group until such time as they are placed on the Inactive Status List, transferred to the Retired Reserve or discharged.

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## PREVENTIVE MEDICINE SECTION

### Pulmonary Nodules Found in Cleveland Survey

To provide accurate rates on the frequency with which malignancy is found among solitary nodules in the lung parenchyma, a study was made of 666 persons in the Cleveland 1949 chest survey whose x-ray film revealed a nodule that was roughly spherical or lobulated in shape, fairly well circumscribed, at least 1 cm. in one diameter, and not obviously calcified. In the mass survey 673,218 chest x-rays were taken.

Follow-up, which included pertinent interval history and further x-rays, began in March 1954, 5 years after the survey, and continued through June 1955. Only 3.3% were of completely unknown status at the end of the observation period. The average follow-up time for those with complete follow-up was 5 years and 3 months.

Nodules occurred 5-1/2 times more frequently among older persons aged 55 - 64 (about age 60) than in persons aged 25 - 34 (about age 30) and more often in white than in nonwhite persons. Among women, the frequency rate was 0.87% per 1000. The male rate of 1.12% was 30% higher. Neither the race or sex differences are due to age distribution of the population. Response to the x-ray survey was poorer among the older age groups in 1949 than among the younger age groups, but even if the response had been better and the study had included more persons, there is no reason to believe that the age-specific nodule frequency rate would have been different.

In 85.4% of the study population, no definite diagnosis had been established at the end of 5 years. Only 3.0% of the nodules were proved malignant,

and 9.0% were proved to be, or very probably were, of tuberculous etiology; 2.6% of the patients had lesions of other etiology. No diagnosis nor even a suspected diagnosis was made in 74.7% of the patients with nodules. However, in 10.7%, tuberculosis and cancer were presumed and it seemed quite likely that malignancy may develop in a certain number of nodules of unproved etiology. Most of the malignant nodules were diagnosed early.

No malignancies occurred in patients under 45 years of age. In all, there were 19 cases of cancer and 1 of Hodgkin's Disease. Sixteen patients were male and 4 were female. Pulmonary resection was performed in 7 patients with cancer. Three of the 7 were alive at the end of the study. Definite or probable calcification was found in 181 nodules, but none of these proved to be malignant. None of these nodules had appeared calcified on the original film. Even if the persons least likely to have malignant nodules are excluded from consideration, the cancer rate is only 9.9% (see table).

Cancer etiology rates in Cleveland study

Population	Num- ber of persons	Cancer	
		Num- ber	Per- cent
Study group	666	20	3.0
Number with followup information <sup>1</sup>	593	20	3.4
Excluding definite and probable calcification	412	20	4.8
Excluding men under 45 and all women	225	16	7.1
Excluding definite and probable calcification, men under 45, and all women	161	16	9.9

<sup>1</sup> Does not include 51 persons known to be alive but for whom there is no other information, and 22 not known to be dead or alive.

The shape of the nodule appeared to have no prognostic significance, but the size appeared to be of considerable importance. In 43 persons, the nodules were 4 cm. in size or larger; 10 of the 43 were subsequently shown to have malignancy. Roughly half of the malignancies were in persons with the larger nodule, and in no case of malignancy was the nodule smaller than



2.0 cm. The nodule was on the right side of the lung in 68% of the cancer cases and 61% of all study cases. A larger proportion of the medially located nodules were malignant than were those in the lateral portion of the parenchyma.

Five hundred and thirty-five patients (80.3%) had no illness attributable to the nodule. After 5 years, only 18 (2.7%) had died of the nodule, and only 23 (3.5%) of the living had any symptoms attributable to the nodule—17 had tuberculosis, 2 had cancer, and 4 had diagnoses of possible cyst, pneumonia, benign tumor, and suspected tuberculosis. In 90 (13.5%), the health status was not determined. Forty-four, whose health status with respect to the nodule was not known, died of unrelated causes. Twenty-four were known to be alive, but for 22, there is no information.

Age-specific mortality rates for the study population and for Cleveland are substantially the same. Although the total mortality among the study group was substantially higher than for Cleveland, the difference is attributed to the higher average age of the study group.

From these findings, it appears that a high index of suspicion of malignancy is warranted in white men over 45 years of age with nodules of 2.0 cm. or larger. Individualized determination and utilization of every diagnostic tool are essential, with the realization, however, that solitary pulmonary nodules are not as hazardous as previously thought. Unfortunately, it is not possible to prove preoperatively in the vast majority of cases which nodules are malignant and which are not. (Public Health Reports, September 1956)

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#### Some Aspects of Health Services in Civil Defense Emergencies

(The vital discussion in the following article is a paper by John M. Whitney, M.D., Director, Health Office, Federal Civil Defense Administration, National Headquarters, Battle Creek, Mich. This timely paper was presented at the 43rd Annual Meeting of the Chemical Specialties Manufacturers Association in Washington, D. C. on 4 December 1956. Dr. Whitney's discussion was prefaced by a showing of the film Crisis, developed by on-the-scene photographic reporting during the aftermath of Hurricane Diane in August 1955. Does your thinking and planning envisage the postdisaster conditions described in the article?)

"My primary purpose in showing the film Crisis was to aid in providing a realistic setting for the program this afternoon. Disasters can come upon us rapidly and often without warning, and viewing scenes of their destructive capacity provides helpful tangibility to discussions of disaster preparedness. The film also illustrates one method of supplying drinking

water, a most vital substance required to sustain life, during natural disasters. The Federal Civil Defense Administration Health Office spearheaded the development of this idea in cooperation with the milk dealer and milk dealer supply industry, recognizing full well, however, that this particular resource is only one of many that are available in time of need. There will still be a place for many other methods of emergency water supply such as tank trucks and portable water purification units. It further illustrates another important point—the historic generosity of American industry when the chips are down and people are in need of basic assistance for their survival. A characteristic of the American people as well as American industry—in fact, American philosophy in toto—is that high values are placed upon human life and when matters of life and death are in the balance, the normal reaction is to act now and worry about the details as well as payment later.

This assemblage here today, devoted to considerations of health aspects of emergencies, is further evidence of the values we place on human life. It is most encouraging to see advance study and attention being given to emergency operations in increasingly greater degree. Impromptu action is always better than none, but action based upon well thought-out planning will pay manifold dividends and result in far greater accomplishment with equivalent effort when the emergency descends.

The Federal Civil Defense Administration has an interest in the entire scope of this program today. By Executive Order, Public Law 875, 81st Congress, an Act to authorize Federal assistance to States and local governments in major disasters, and for other purposes, is an administrative responsibility of the Federal Civil Defense Administration. Three prime functions are involved. One is to foster and promote plans for coping with natural disasters. The film you saw was a minor aspect of this function. Another is to coordinate disaster relief activities of all Federal agencies. And the third is to administer Federal funds in major natural disasters when so directed by the President for the emergency restoration of public facilities and the protection of life and property.

While the consideration of emergency action in natural disasters (flood, fire, hurricane, tornado, earthquake, major explosions, and the like) is extremely important and is heartily endorsed, the primary purpose of the Federal Civil Defense Administration is in a field far greater in magnitude with potentially much more extensive destruction. Not having experienced an enemy attack of any kind in this country, it is hard for us to visualize the destructive effect of attack even with conventional weapons. With nuclear weapons, the problem becomes far more complex. The importance, however, of devoting great effort to civil defense planning is amply justified if prompted only by headlines of the past few weeks.

The major aspects of the Federal Civil Defense Administration Health Office program involve emergency medical care, stockpiling medical equipment and supplies, the provision of public health services, chemical



warfare and biological warfare defense, and radiological defense. The public health program and certain phases of chemical warfare and biological warfare defense have been delegated to the Department of Health, Education, and Welfare. The Public Health Service and Food and Drug Administration within that Department carry out these delegated functions.

Much effort to date has been devoted to the problem of emergency medical care. With the probable destruction of most of our hospital facilities, the provision of emergency medical care must encompass not only the organization and training of medical and paramedical personnel, but also the provision of life saving emergency treatment stations, (first-aid stations) and emergency hospitals in facilities not now used for medical and hospital purposes. Stockpiles of medical supplies and equipment are located throughout the country near population centers. Emergency hospitals are being prepositioned near, or in, facilities where their use is anticipated. Stockpiles currently in existence will supply the needs for 4-1/4 million casualties for 3 weeks.

This program does not envision business as usual in medical practice. It is based on the hard facts of realism wherein the best for the most will be done by the fewest with the least and with full recognition that the best will never be nearly enough. Training in mass casualty care philosophy is underway at medical schools, the Army Medical Training Centers, by the Federal Civil Defense Administration, and by State Civil Defense organizations. Some States have also stockpiled medical items, half of the costs being borne by FCDA through the Contributions Program.

While major attention must necessarily be given to the problem of casualty care during the early period following enemy attack, the far more important problem of providing health protection to the uninjured survivors must be given greatly increased attention. Whether we, as a Nation, survive and maintain the will to resist may well hinge upon our success in this area.

In the absence of suitable shelter, our only defense at present against successful attack with thermonuclear weapons is the evacuation of populous areas to the extent possible. The fewer the people within the effective range of exploding weapons, the fewer will be the casualties. But the evacuation of large numbers of people from metropolitan areas will create manifold problems wherever they go. The mere exposure to the elements and overcrowding in homes or shelters will create health hazards. What will be the consequences? Many communicable diseases against which we have effective tools will increase perceptibly solely because these tools have not been utilized to their fullest capability. Smallpox and diphtheria are examples. For proof, witness the recent occurrence wherein nine members of a family in a large city contracted diphtheria and two died. It behooves everyone to become revaccinated or inoculated to be sure the immunity is active. Vaccines, sera, and antitoxins are also being stockpiled.

The filth-borne diseases which we have had such spectacular success in controlling are likely to run rampant—typhoid fever, diarrhea, the dysenteries. Likewise, the insect- and rodent-borne diseases with which we have had similar success may break loose with alarming celerity.

What are the arguments for and against the likely development of epidemics: On the credit side, may be listed the following:

1. We have a low reservoir of infection in this country because of our success in communicable disease control. With many diseases, the source has been practically, but not quite, eliminated.
2. We have an informed populace who understand a great deal about the causes, method of spread, and control of communicable diseases, and are also cognizant of the importance of sanitation.
3. We have many professional health workers and others in allied professions who, thoroughly familiar with the principles and practices of communicable disease control, can perform yeoman service if given the proper tools and materials to work with.
4. We have an alert and competent medical profession armed with potent and effective therapeutic agents.
5. In general, the time factor is on our side. Epidemics start with outbreaks and if we are properly organized to control the outbreaks, the epidemics will not develop.

On the debit side—arguments that can be listed in favor of the thesis that communicable disease control will be a major problem—may be listed the following:

1. We have a population highly susceptible to many communicable diseases. This is because of the low incidence in recent years and, thus, a lack of immunity results.
2. Complacency, because of low incidence, may cause us to fail to keep our guard up and maintain active immunity where possible.
3. The destruction or inoperability of usual sanitary facilities to which we have all become accustomed will provide added opportunities for infection. Furthermore, remaining facilities will likely become seriously overloaded.
4. There will be overcrowding far beyond normal experience.
5. We may experience a lack of food and of adequate clothing.
6. In addition to all the foregoing—and of great importance—radiation exposure tends to reduce natural resistance.

The result will be a potentially explosive situation which may take very little to tip the balance either way. Among the most important aspects is the provision for a sanitary environment. Sanitation is the basis upon which our modern public health programs were built. Should this foundation



crumble, dire consequences are likely. Unless we can provide satisfactory water supplies, proper sewage disposal, clean and wholesome milk and food, maintain control of insects and rodents, and provide appropriate shelter, explosive outbreaks eventually developing into epidemics are bound to result.

Permit me to review for a moment the possible sequence of vector-borne diseases following mass evacuation of a large metropolitan area. Initially, there will be a great deal of annoyance and discomfort from flies, mosquitoes, bedbugs, lice, fleas, ticks, chiggers, mites, rats, and mice. After the first week, we may find outbreaks of diarrhea and dysentery, food poisoning, possibly typhoid fever, epidemic pink eye, fly larva infestations, encephalitis, tick paralysis, scabies, rat bite fever, and Weil's disease. A few weeks later, we might add amoebic dysentery, malaria, typhus fever, spotted fever, tularemia, and rickettsialpox. Should biological warfare attacks be employed, the picture may be further complicated with diseases such as cholera, yellow fever, dengue, plague, and perhaps others.

The control of many of these potentially explosive types of diseases rests primarily on sanitation or the appropriate and judicious usage of insecticides and rodenticides.

Dr. Walo von Greyerz, the Chief Medical Officer for Civil Defense in Sweden, visited our offices recently. He was asked, among other things, "What do you consider some of the most important items that will be needed following enemy attack?" Surprisingly, his answer was "Soap—plenty of it—and paper." The need for soap is obvious and paper can be used as a substitute disposable item for a great many purposes.

The principal stockpiles the FCDA currently has involve primarily mass casualty care items. There are also engineering items such as generators, pumps and pipe for water supply, portable water purification units, and a small amount of sanitation items involving chlorine comparators for water testing, hand sprayers and dusters, water purification tablets, and screening kits for the detection of chemical warfare agents in water and food. The sanitation stockpile is currently under review by a committee of experts from whom we expect recommendations for more appropriate quantity and balance of the stockpile items.

We will appreciate the cooperation of your organization in the solution of the problems we face. We welcome your assistance and advice. Certainly, we need all the technical competency available to aid in the planning for civil defense disasters and in the subsequent direction of programs required to cope with these enormous problems.

As individuals, you can offer your services to civil defense through your local and State civil defense organization. While civil defense should be everyone's business, it is especially the business of those, such as you who have a specific contribution to make by reason of technical competency.

I sincerely appreciate this opportunity of meeting with you and trust we may enjoy continued association."

Milk Industry Aids Civil Defense

Safe drinking water may now be assured in disaster areas by fast on-the-spot delivery of packaged drinking water. The nation's dairies which regularly supply communities with packaged milk can convert their production lines at a moment's notice from filling containers with milk to filling them with safe drinking water under the same high sanitary standards normally required of the dairy. The water-filled containers can then be delivered rapidly to the disaster area by truck, rail, air, or boat.

In general, planning at the local level might take this kind of pattern: The civil defense director would ask representatives of the interested civil defense services, the local health department, the American Red Cross, and the milk dealers in his community to meet with him to discuss the application of this method of providing drinking water during disaster situations—flood, fire, hurricane, tornado, earthquake, explosion, drought, or other emergency.

Milk dealers volunteering to cooperate would want discussion of all aspects of potential problems—water supply, sanitation communications, transportation, delivery cases, health officer approval, supply of containers, identification of containers, et cetera. Agreeable arrangements as desired by the dairymen with regard to compensation would be concluded. (Federal Civil Defense Administration has no funds for this purpose.)

When disaster strikes and there is need for water, the civil defense director of the stricken area would request the cooperating dairies to start packaging water as soon as possible. He would indicate the quantity required and where to deliver it. If local dairies were put out of commission, dairies in neighboring towns would be requested to assist through mutual aid arrangements with their civil defense directors.

Packaging would begin with containers on hand. Labels or identifiable markings would be desirable, but not essential, to avoid any mixup after delivery with containers containing milk. Hand stamps, date stamping devices, or special caps are possible methods of identification. These details will vary widely depending on the local situation and type of equipment. Suggestions have been set forth varying from a special container clearly labeled "Drinking Water" to merely placing caps bottom-side up. These details can be worked out at the local level by the milk dealers in cooperation with the milk dealer supply industry. (Federal Civil Defense Administration, PA-F-5, Drinking Water for Disaster Victims - How Your Dairy Can Help)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, 16 May 1955.

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### Shipboard Insect Control Survey

Preventive Medicine Unit No. 6, at the request of Commander, Service Force, U.S. Pacific Fleet, conducted a survey of insect control methods utilized by ServFor ships. The purpose of this survey was to determine the extent of failure of recommended insecticides to control insect pests, the reasons for such failure, and to recommend changes when indicated.

Detailed questionnaire forms were sent to ServFor ships for completion and return. One hundred and two questionnaires were returned. Follow-up inspections were then made of the ships returning questionnaires that were actually based at Pearl Harbor—a group of thirty-four in all.

Cockroaches had been present on nearly all ships and pests of dry-stores had occurred within the previous three months on 53% of the ships inspected. Bedbugs and other bloodsucking pests appeared to be minor problems. Sanitary conditions favorable for cockroach infestations were found on 29% of these ships, improper application of insecticides occurred on 62%, and unsatisfactory control was found on 56% of the ships inspected.

The most common discrepancy pertaining to insecticides was the use of DDT, either as an aerosol or as a spray, for cockroach control. The use of aerosol dispensers or electric space spray equipment for the application of residuals was the most common error found from the equipment standpoint. It was also noted that, with few exceptions, none of the ships were using a hand pump-type oiler or a syringe and needle to apply residuals to small cracks and inaccessible spaces as recommended in current medical manuals and publications.

The most frequent kind of improper application found was the use of space sprays in situations where residual applications were required. Even when correct insecticides, suitable equipment, and proper methods were used, in many cases a lack of thoroughness in application to all potential cockroach harborages was responsible for unsatisfactory control. Application only to exposed surfaces which are regularly scrubbed down, omitting application to hidden roach harborages, is a common fault.

Although many ships reported that physical features made the application of insecticides difficult, none reported sanitation as a factor. However, on 20% of the ships inspected, general sanitation was less than good and, on 29%, it was considered to be questionable from a cockroach control standpoint. Even where general sanitation was good, an accumulation of minute particles of food or grease in cracks and other locations was often noted.

The following locations or conditions were reported most frequently as providing harborage or as being responsible for the poor application of insecticides: paneling, overhead pipes, cables, glass fiber insulation, drinking fountains, refrigerators, exhaust hoods, ventilators, drainage systems, arrangement of equipment in the galley, loose fitting cabinets,

old sheet metal lockers, loose lagging, piled stores, fuse and switch boxes, moldings of counters and tables, bulletin boards, pictures, coiled fire hoses, and asbestos pipe coverings.

Unsatisfactory control was considered to exist when the ships' representatives expressed dissatisfaction or when more than a few roaches were found during a standard inspection procedure. Any evidence of live bedbugs or drystore pests more than 48 hours after treatment was considered to indicate unsatisfactory control. It is considered significant that none of the ships with satisfactory control appear in the questionable sanitation column. Poor control was found in only one case after proper application of chlordane and that occurred where sanitation was substandard. All other ships listed in the unsatisfactory column had been using either the wrong method or inadequate application. Data reported on questionnaires from ships not inspected are less conclusive because of unknown factors, such as degree of sanitation and thoroughness of application. Follow-up inspections were made on six ships which had had exceptionally heavy infestations. On these ships a strict sanitation program designed to eliminate all food for cockroaches was established and maintained. Thorough spot residual applications of chlordane were utilized and excellent control was obtained in all cases.

Bedbugs were reported or found on only three of the ships included in this survey. Two had obtained control, one with a proper application of 5% DDT and the other with an improper and unnecessary use of 20% DDT emulsion concentrate. The third had attempted control with what appears to have been essentially a chlordane space spray plus sterilization of all mattresses and bottoms. In this case, bedbugs were found again after a few weeks, and at this time, Preventive Medicine Unit No. 6 was contacted. It was pointed out that sterilization would not destroy bedbug eggs in berthing compartments and the residual application of 5% DDT was explained and recommended. Following treatment, no further signs of bedbugs occurred until after the ship had been to the Far East when a new infestation was found in a different compartment. Five percent DDT was immediately applied and control obtained.

Other pests reported were as follows: crab lice, mosquitoes, flies, moths, ants, and spiders. Crab lice were controlled in all cases with 10% DDT dusting powder. The other pests were minor problems and occurred only when at dockside. Night biting mosquitoes were sometimes a problem on ships in certain areas. Failure to maintain a stock of aerosol dispensers on board, and to use them properly, frequently results in unnecessary mosquito annoyance.

No cases of resistance to insecticides were found. No controlled tests were conducted with cockroaches because satisfactory kill was obtained in all cases where it was possible to determine that control measures were adequately applied.

Nine ships reported no chlordane on hand and evidently less than 50% maintained the most useful general control items, such as standard space



spray, aerosol dispensers, or suitable DDT formulations. Most significant is the very small number of ships using types of equipment necessary for thorough application of chlordane residuals to all hidden and inaccessible cockroach harborages (that is, a hand oiler or syringe and needle). The best available items of equipment for application of residuals to exposed surfaces are the one- and three-quart sprayers. Even these items are not entirely satisfactory for the following reasons: There is no control of the spray particle size (one-quart), or the control mechanism provided (three-quart) is not effective so that the spray pattern produced is not coarse enough for a satisfactory residual application unless the sprayer is held very close to the surface; and even then, there is considerable loss of material in very fine spray particles. The one-quart sprayer must be pumped continuously and the three-quart sprayer operates for only 30 seconds on one pump-up operation.

With one or two exceptions, none of the Medical Department personnel on inspected ships had received any specialized or refresher training in shipboard insect control methods. Those who were providing proper supervision had obtained the correct information from available manuals or instructions or from chance contact with experienced pest control personnel.

It was recommended that a short refresher training course be provided for all hospital corpsmen assigned to PacFlt ships. It has also been requested that the Bureau of Medicine and Surgery consider establishment of a standard short course in shipboard insect and rodent control at other suitable locations in order that uniform training will be available to all ships of the Navy. It was further recommended that the Bureau of Ships be requested to consider establishment of minimum ship's allowance lists of pest control items for shipboard insect control and the provision of a more satisfactory item for the application of residual insecticides. (ComServPac Information Bulletin, October 1956)

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#### Hospital Solid Wastes and Their Handling

Recent studies on the subject of hospital solid wastes and their handling have pointed out that many processes considered acceptable in the past are now in need of revision. The full scope of the disposal problem is not yet ascertained. For example, one aspect of the problem posed for study is whether or not hospital sewage is more of a health hazard than ordinary municipal sewage.

Debate ranges from the one extreme that hospital wastes are no more infectious than wastes from the average population with no specialized treatment required to the other extreme wherein hospital wastes are considered much more infectious with specialized treatment required at the hospital before wastes enter the regular sewage system.

Another problem concerns the definition of satisfactory handling of infectious wastes, such as surgical wastes and wastes from infectious wards.

Final disposal of infectious solid wastes from hospitals is best accomplished by incineration if the facility is properly designed, situated, and operated. Unfortunately, however, it is felt that experience to date with incineration—particularly departmental installations as compared to central installations—has frequently been unsatisfactory. Authorities agree that the practical problems concerning the operation of small incinerators for solid hospital wastes are in need of further study.

A detailed report with recommendations of interest to hospital personnel is contained in the March 1956 issue of the American Journal of Public Health. In view of the importance of the subject, this article is called to the attention of those who may have overlooked this particular issue. It is recommended reading.

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